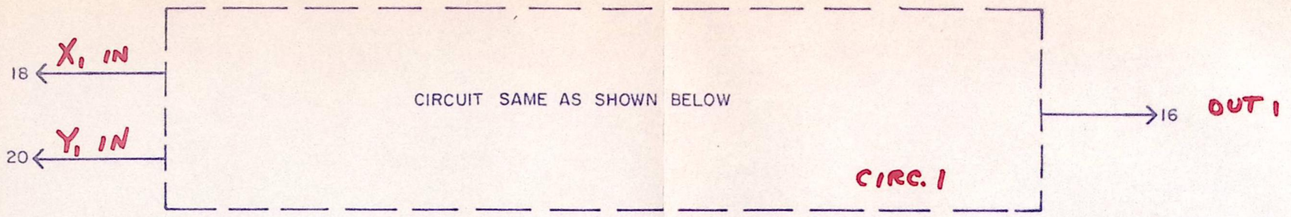
COMPUTER
IMAGE
CORPORATION

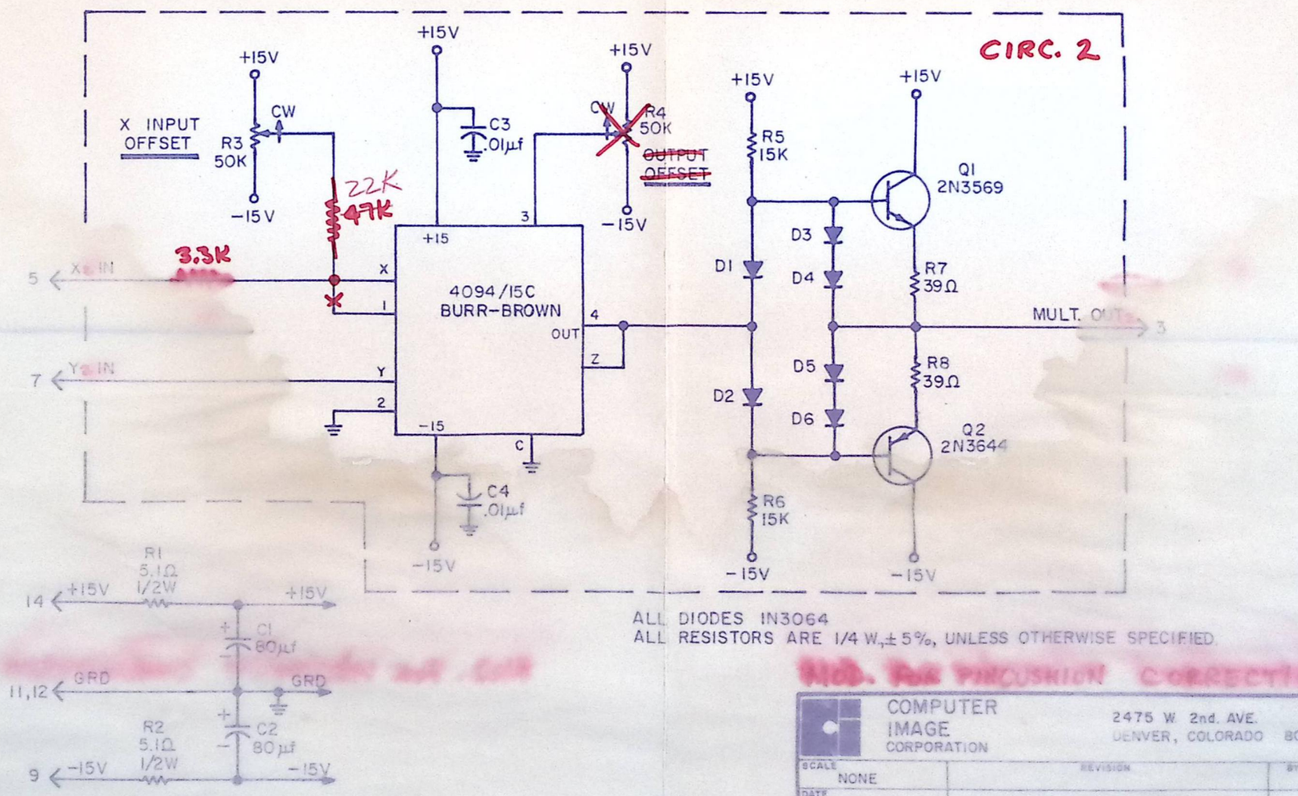
CAMERA HEAD & CAMERA CONTROL
CAESAR

COMPUTER
IMAGE
CORPORATION

CAMERA HEAD & CAMERA CONTROL
CAESAR

ALTEMUS

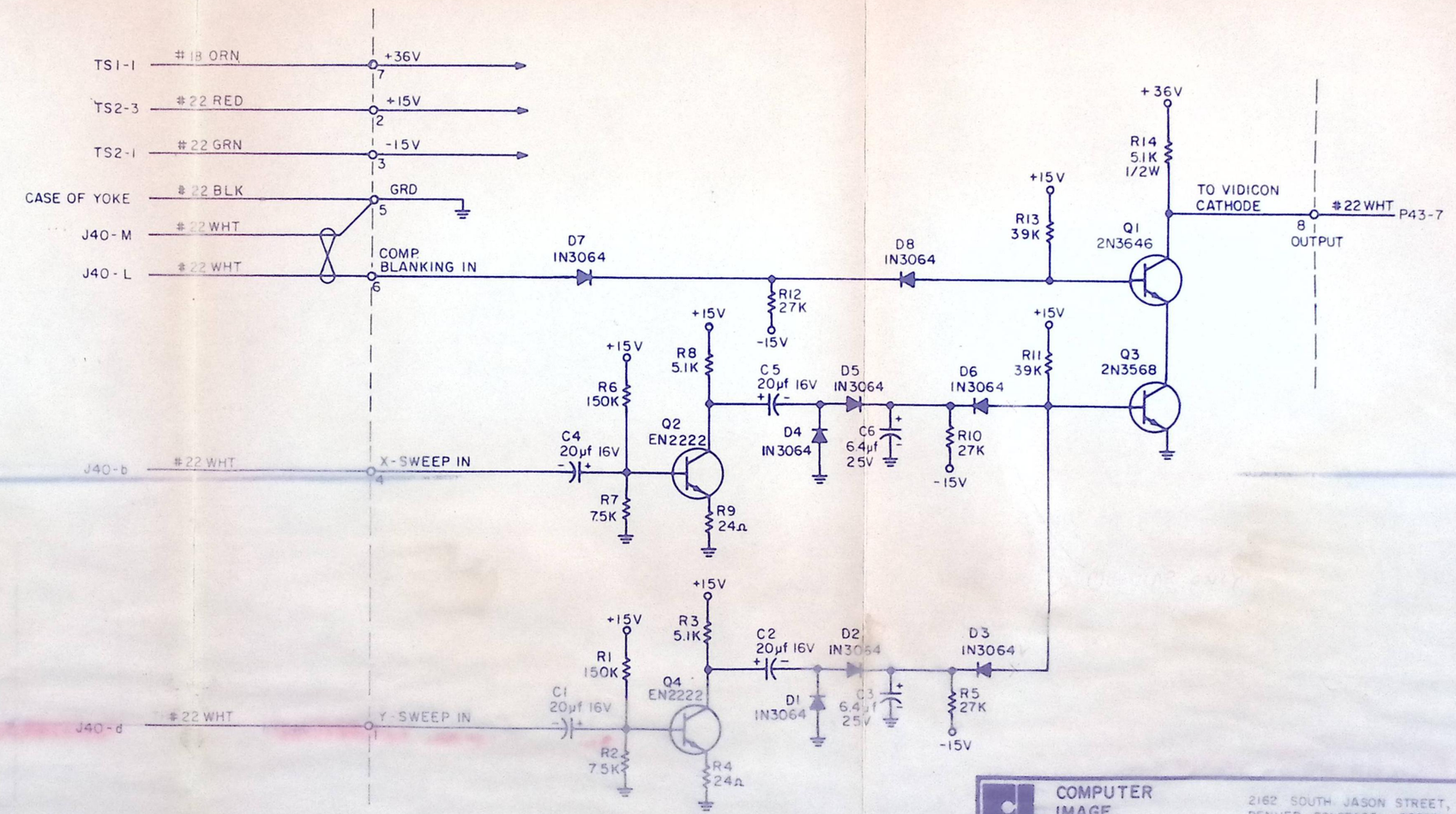




ALL DIODES IN3064
ALL RESISTORS ARE 1/4 W, ± 5%, UNLESS OTHERWISE SPECIFIED

NOT FOR PRODUCTION CORRECTION

COMPUTER IMAGE CORPORATION	2475 W. 2nd. AVE. DENVER, COLORADO 80223		
SCALE: NONE	REVISION	BY	DATE
DATE: 11-7-70			
DR'N. E.R. / CK'D. J.B.			
APP'VD J.B.			
TITLE: MULTIPLIER CARD ANIMATION AID		NO. AM-107	



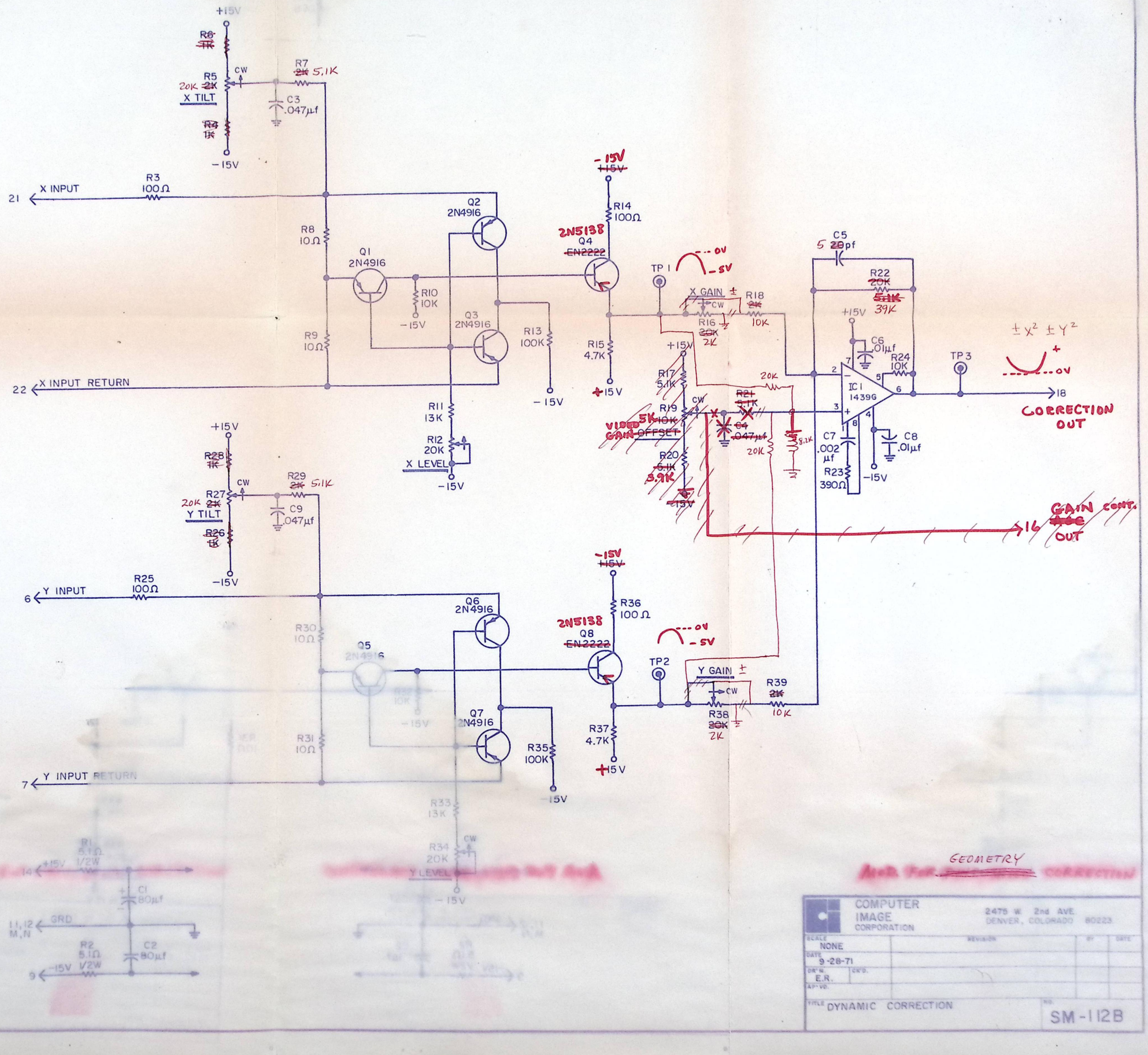
NOTE
ALL RESISTORS 1/4W UNLESS OTHERWISE SPECIFIED.

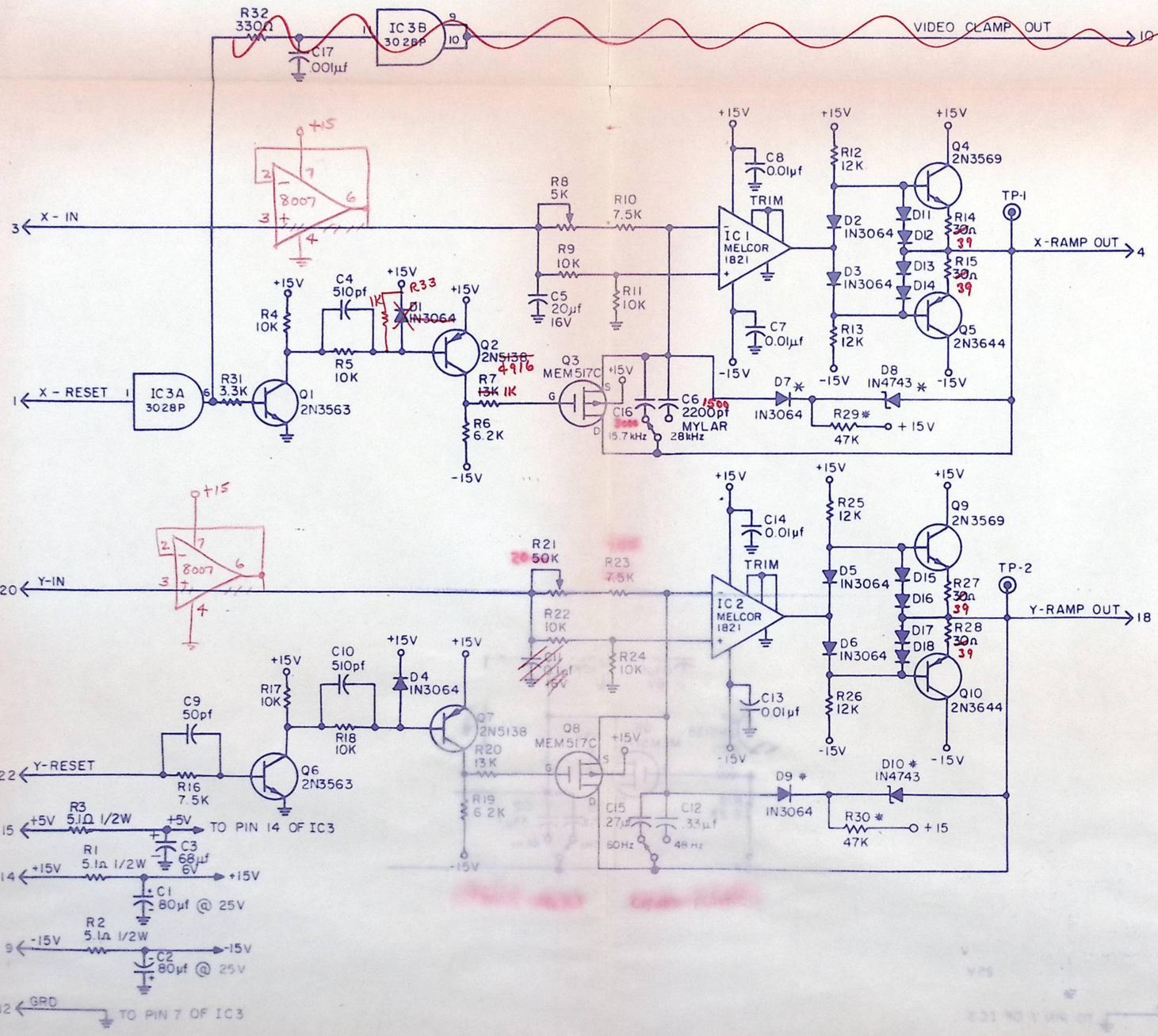
COMPUTER IMAGE CORPORATION
2162 SOUTH JASON STREET, DENVER, COLORADO 80223

SCALE NONE	REVISION		BY	DATE
DATE 2-2-70				
DR'N E.R CK'D				
AP'VD				

TITLE: CAMERA VIDICON BLANKING & PROTECTION CAESAR

NO. SM-109


+15V
R6 1K
R5 20K 2K X TILT
CW
R7 2K 5.1K
C3 .047µf
R4 1K
-15V
21 X INPUT
R3 100Ω
R8 10Ω
R9 10Ω
Q1 2N4916
Q2 2N4916
Q3 2N4916
R10 10K
-15V
R13 100K
-15V
22 X INPUT RETURN
R11 13K
R12 20K X LEVEL
-15V
-15V
+15V
R14 100Ω
2N5138 Q4 EN2222
R15 4.7K
+15V
TP 1
0V
-5V
X GAIN ±
CW
R16 20K 2K
R18 2K 10K
+15V
R17 5.1K
CW
R19 10K 5K VIDEO GAIN OFFSET
R20 6.1K 3.9K
-15V
C4 .047µf
R21 5.1K
20K
5.1K
C5 5 20pf
R22 20K 5.1K 39K
+15V
C6 .01µf
R24 10K
IC1 1439G
TP3
±X² ±Y²
0V
18 CORRECTION OUT
C7 .002µf
R23 390Ω
C8 .01µf
-15V
16 GAIN CONT. OUT
+15V
R28 1K
R27 20K 2K Y TILT
CW
R29 2K 5.1K
C9 .047µf
R26 1K
-15V
6 Y INPUT
R25 100Ω
R30 10Ω
R31 10Ω
Q5 2N4916
Q6 2N4916
Q7 2N4916
R32 10K
-15V
R35 100K
-15V
7 Y INPUT RETURN
R33 13K
R34 20K Y LEVEL
CW
-15V
-15V
+15V
R36 100Ω
2N5138 Q8 EN2222
R37 4.7K
+15V
0V
-5V
TP2
Y GAIN ±
CW
R38 20K 2K
R39 2K 10K
R1 5.1Ω 1/2W
14 +15V
C1 80µf
11,12 M,N GRD
R2 5.1Ω 1/2W
C2 80µf
9 -15V
GEOMETRY
COMPUTER IMAGE CORPORATION
2475 W. 2nd AVE. DENVER, COLORADO 80223
SCALE NONE
DATE 9-28-71
DR'N. E.R.
CH'D.
APP'VD.
REVISION BY DATE
TITLE DYNAMIC CORRECTION
NO. SM-112B



NOTE

ALL RESISTORS 1/4 W. ±5%, UNLESS OTHERWISE SPECIFIED.
ALL DIODES ARE IN3064

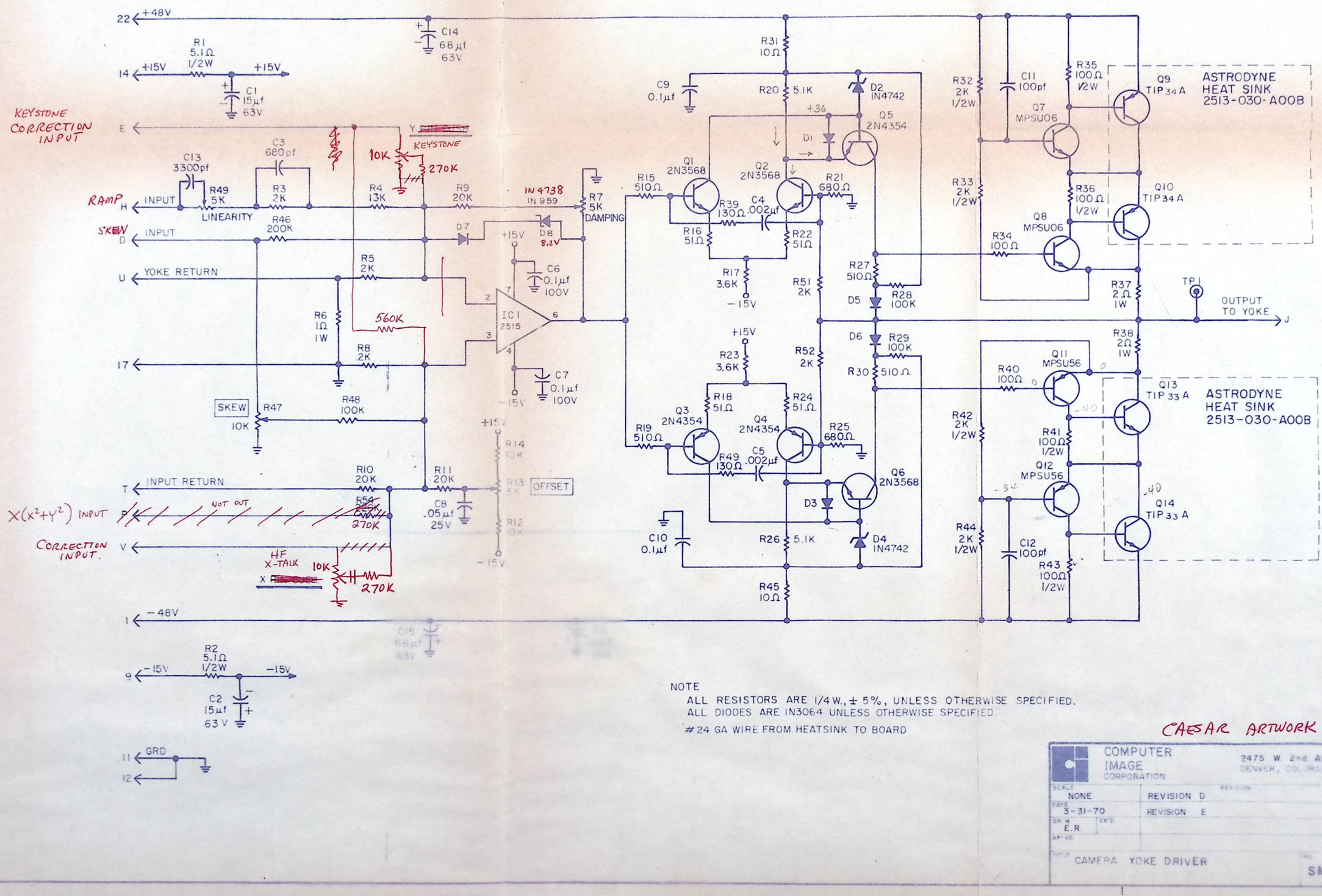
* THESE COMPONENTS ARE OPTIONAL

COMPUTER IMAGE CORPORATION
2475 W. 2nd. AVE.
DENVER, COLORADO 80223

SCALE NONE	REVISIONS REVISION C	BY D.M.	DATE 6-28-71
DATE 2-2-70			
DR'N E.R. CK'D			
APV'D			

TITLE: CAMERA RAMP GENERATOR CAMERA CAESAR

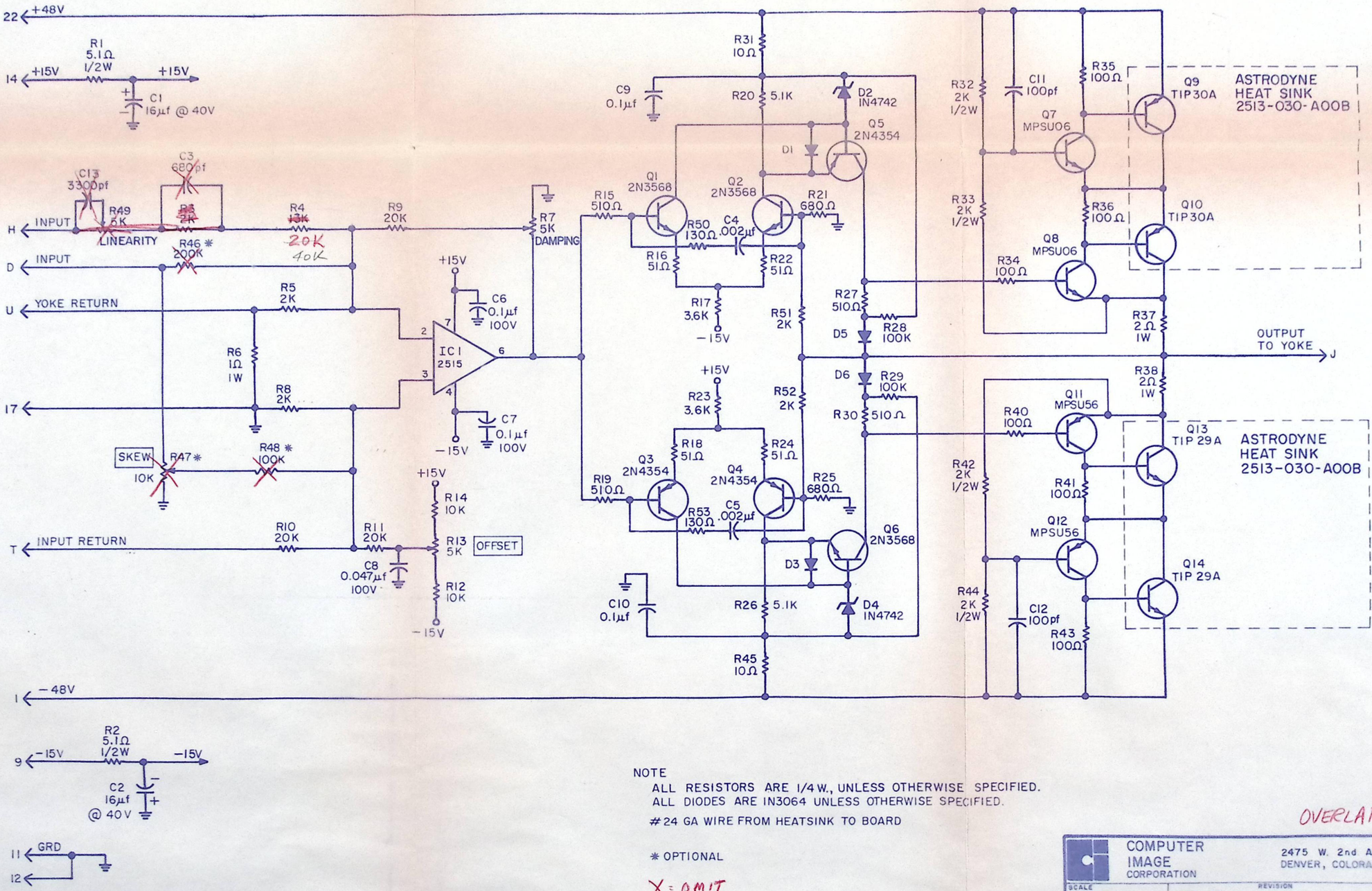
NO. SM-113A&B&C



NOTE
ALL RESISTORS ARE 1/4 W., ± 5%, UNLESS OTHERWISE SPECIFIED.
ALL DIODES ARE IN3064 UNLESS OTHERWISE SPECIFIED.
#24 GA WIRE FROM HEATSINK TO BOARD

CAESAR ARTWORK CAM. "A"

COMPUTER IMAGE CORPORATION	2475 W. 2nd AVE DENVER, COLORADO 80223		
SCALE NONE	REVISION D	BA	1-6-72
DATE 3-31-70	REVISION E	R K P	7-6-73
DR'N E.R / CK'D / APP'VD			
TITLE CAMERA YOKE DRIVER		SIZE SM-117	E



NOTE

ALL RESISTORS ARE 1/4 W., UNLESS OTHERWISE SPECIFIED.
ALL DIODES ARE IN3064 UNLESS OTHERWISE SPECIFIED.

#24 GA WIRE FROM HEATSINK TO BOARD

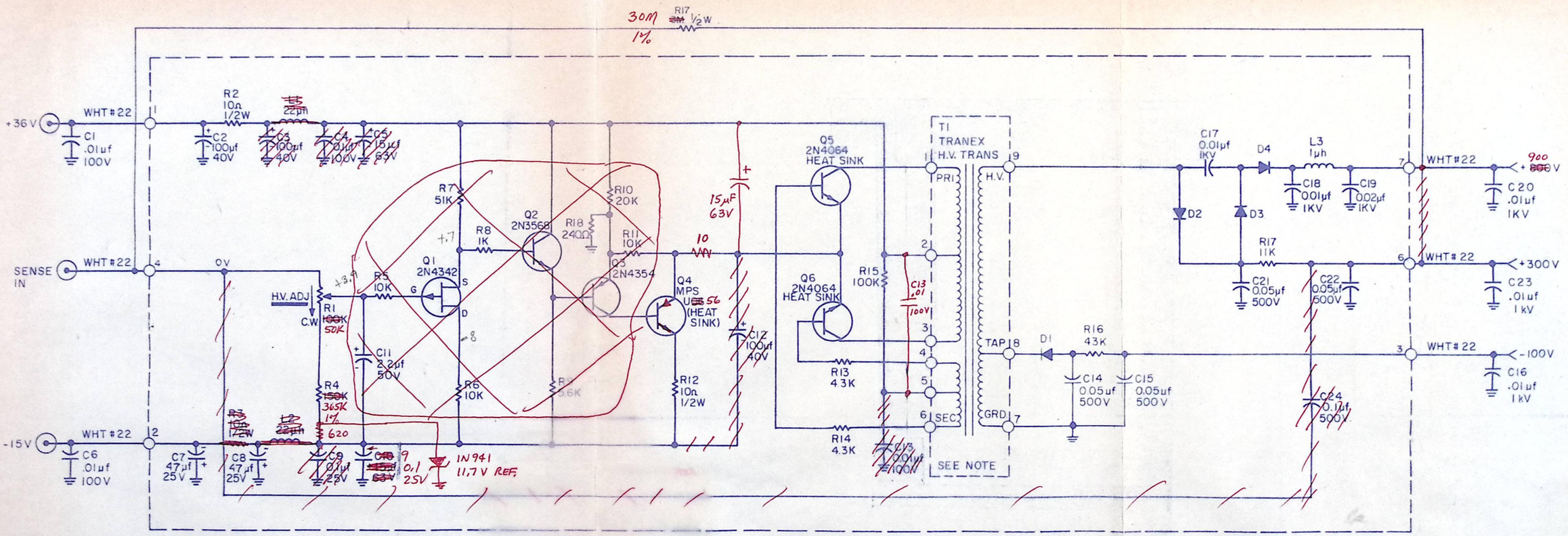
* OPTIONAL

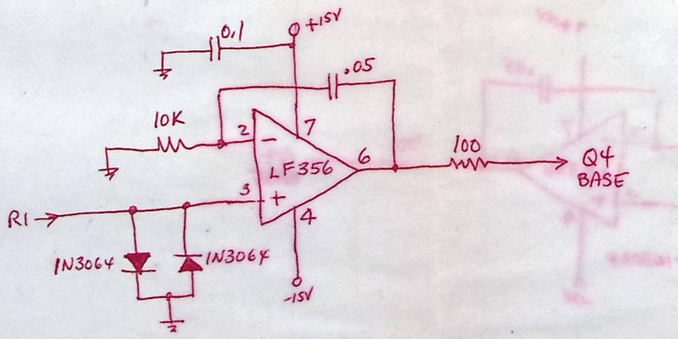
X = OMIT

OVERLAP

COMPUTER IMAGE CORPORATION	2475 W. 2nd AVE. DENVER, COLORADO 80223		
SCALE NONE	REVISION D	B. B.A.	DATE 1-6-72
DATE 3-31-70			
DR'N E.R. CK'D.			
AP'VD.			
TITLE CAMERA CONTROL CAMERA YOKE DRIVER SCHEMATIC		NO. SM-117D	

COMPUTER IMAGE CORPORATION		2475 W 2nd. AVE DENVER, COLORADO 80223	
SCALE NONE	REVISION	BY	DATE
DATE 2-2-70			
DR'M E R. CK'D			
AP'VD.			
TITLE FOCUS COIL CURRENT REGULATOR		NO. SM - 119	





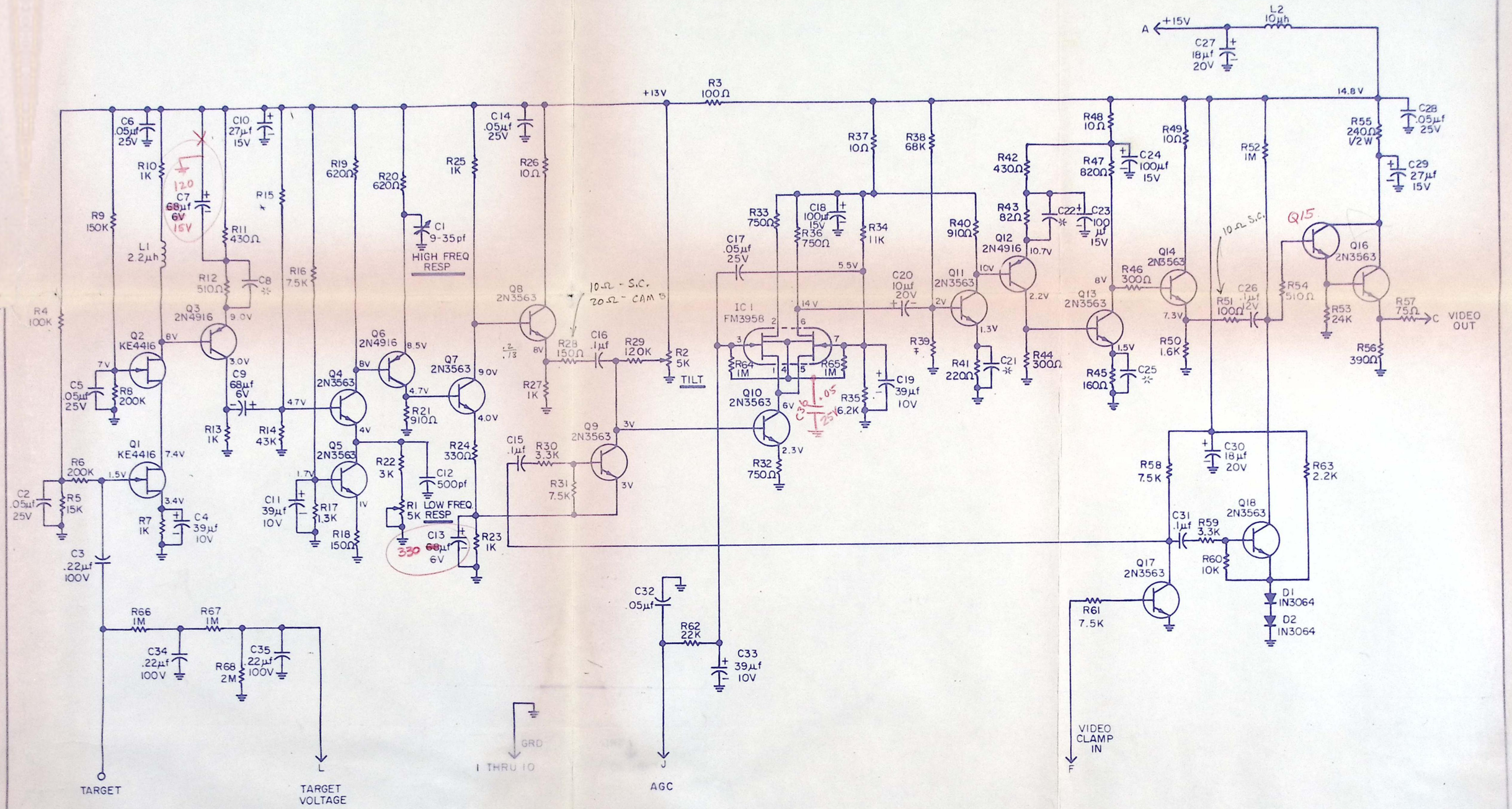
NOTE:
ALL DIODES ARE SFM 30, SEMTECH, UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS 1/4 W ±5%, UNLESS OTHERWISE SPECIFIED.
ALL TRANSFORMER LEADS # 24 WHITE.

ARTWORK CAESAR CAM A

COMPUTER IMAGE CORPORATION
2475 W. 2nd AVE
DENVER, COLORADO 80223

SCALE NONE	REVISION Rev	Rev B	DATE 12-7-73
DATE 2-2-70			
DR'N. E.R. CK'D.			
AP'VD.			

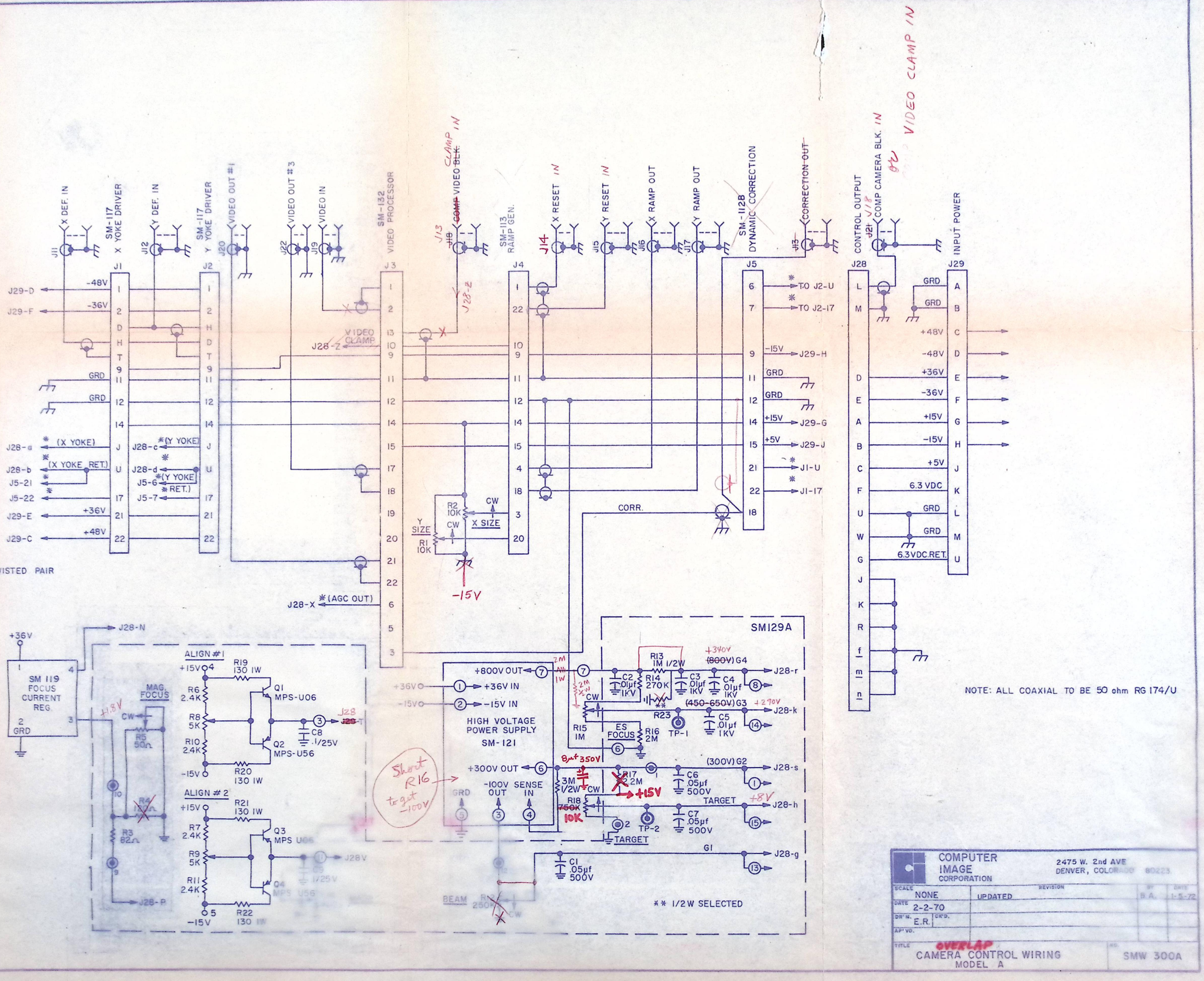
TITLE: CAMERA HIGH VOLTAGE POWER SUPPLY
NO. SM-121A



NOTE:
* SELECTED VALUE.
∓ SELECT FOR 1.3 V AT EMITTER OF Q13

COMPUTER IMAGE CORPORATION
2475 W 2nd AVE
DENVER, COLORADO 80223

SCALE	NONE
REVISION	REVISION H
DATE	5-16-71
DR'N	E.R.
CK'D	
APP'VD	
TITLE	VIDEO PRE-AMP CAESAR
NO.	SM-126H


J1 X YOKE DRIVER
J2 Y YOKE DRIVER
J3 VIDEO PROCESSOR
J4 RAMP GEN.
J5 DYNAMIC CORRECTION
J28 CONTROL OUTPUT
J29 INPUT POWER
X DEF. IN
Y DEF. IN
VIDEO OUT #1
VIDEO OUT #3
VIDEO IN
COMP VIDEO BLK.
X RESET IN
Y RESET IN
X RAMP OUT
Y RAMP OUT
CORRECTION OUT
COMP CAMERA BLK. IN
VIDEO CLAMP IN
-48V
-36V
GRD
+36V
+48V
+15V
-15V
+5V
6.3 VDC
6.3VDC.RET.
J29-D
J29-F
J29-H
J29-G
J29-J
J29-C
J29-E
J28-a (X YOKE)
J28-b (X YOKE RET.)
J28-c (Y YOKE)
J28-d (Y YOKE RET.)
J5-21
J5-22
J5-6
J5-7
J28-X (AGC OUT)
J28-Z VIDEO CLAMP
J1-U
J1-17
TO J2-U
TO J2-17
R1 10K Y SIZE
R2 10K X SIZE
CW
CORR.
* TWISTED PAIR
SM 119 FOCUS CURRENT REG.
+36V
GRD
J28-N
MAG. FOCUS
R5 50Ω
R4 150Ω
R3 82Ω
J28-P
ALIGN #1
ALIGN #2
R19 130 1W
R21 130 1W
R22 130 1W
R6 2.4K
R7 2.4K
R8 5K
R9 5K
R10 2.4K
R11 2.4K
Q1 MPS-U06
Q2 MPS-U56
Q3 MPS U06
Q4 MPS U56
C8 .1/25V
J28-T
J28-V
SM129A
HIGH VOLTAGE POWER SUPPLY SM-121
+800V OUT
+36V IN
-15V IN
+300V OUT
-100V OUT
SENSE IN
R13 1M 1/2W
R14 270K
R15 1M
R16 2M
R17 2.2M
R18 750K 10K
R23
TP-1
TP-2
ES FOCUS
TARGET
BEAM
C1 .05µf 500V
C2 .01µf 1KV
C3 .01µf 1KV
C4 .01µf 1KV
C5 .01µf 1KV
C6 .05µf 500V
C7 .05µf 500V
+340V (800V) G4
(450-650V) G3
+270V
(300V) G2
G1
J28-r
J28-k
J28-s
J28-h
J28-g
+8V
Short R16 to get -100V
8µf 350V
** 1/2W SELECTED
NOTE: ALL COAXIAL TO BE 50 ohm RG 174/U
COMPUTER IMAGE CORPORATION
2475 W. 2nd AVE DENVER, COLORADO 80223
SCALE NONE
DATE 2-2-70
DR'N. E.R.
CK'D.
APP'VD.
REVISION UPDATED
BY B.A.
DATE 1-5-72
TITLE OVERLAP CAMERA CONTROL WIRING MODEL A
NO. SMW 300A

X-DEFL. IN
J11
Y-DEFL. IN
J14
X YOKE DRIVER SM-117E
J1
Y YOKE DRIVER SM-117E
J2
MULTIPLIER AM-107
J3
CORRECTION OUT J17
X RESET IN
J13 J13A
DUAL RAMP GEN. SM 113D
J4
Y-RESET IN
J16 J16A
X-RAMP OUT
J12
Y-RAMP OUT
J15
DYNAMIC CORRECTION SM-112
J5
CLAMP IN J18 ***
J28-Z
J28-X
COMP. CAM. BLANKING IN
J19 J19A
CONTROL OUTPUT J28
INPUT POWER J29
J29-D
-48V
-15V
+48V
J29-C
J28-c * Y YOKE
J28-d * Y YOKE RET
J28-a * X YOKE
J28-b * X YOKE RET
J5-6
J5-7
J5-21
J5-22
J2-U
J2-17
J1-U
J1-17
J29-H
J29-G
J29-J
+48V
-48V
+36V
-36V
+15V
-15V
+5V
6.3 VDC
GND
GND
6.3 VDC RET
MAG. FOCUS R5 50Ω CW
160
ALIGN 2 R9 5K CW
ALIGN 1 R8 5K CW
X SIZE R2 10K CW
Y SIZE R1 10K CW
BEAM R12 250K CW
BEAM ON OFF
TARGET R18 1M CW
E.S. FOCUS R15 1M CW
R11 2.4K
R22 130Ω 1W
R7 2.4K
R21 130Ω 1W
R10 2.4K
R20 130Ω 1W
R6 2.4K
R19 130Ω 1W
R3 43Ω 1W
Q4 MPS-U56
Q3 MPS-U06
Q2 MPS-U56
Q1 MPS-U06
C9 .1μf 25V
C8 .1μf 25V
C1 .05μf 500V
C6 .05μf 500V
C7 .05μf 500V
R17 3M
R16 2M
R14 910K
C5 .01μf 1kV
R13 1M 1/2W
C3 .01μf 1kV
C3 .01μf 1kV
C4 .01μf 1kV
TP 1
TP 2
TARGET
G1
G2
G3
G4
J28-g
J28-h
J28-s
J28-k
J28-r
J28-P
J26-V
J28-T
J28-N
SM 119 FOCUS CURRENT REG.
+36V
SM-129 B
SM-121A HIGH VOLTAGE POWER SUPPLY
+900V OUT
SENSE IN
+300V OUT
-100V OUT
+36 V
-15 V
+15V
30M
3M 1/2W

NOTE
ALL RESISTORS ARE 1/4 W., ± 5%, UNLESS OTHERWISE SPECIFIED.

* TWISTED PAIR.
*** PICK UP CAMERA, BNC FROM J13 TO J18 SCAN CONVERTER CAMERA, CLAMP COMES FROM J50 ON COLOR CONTROLER.

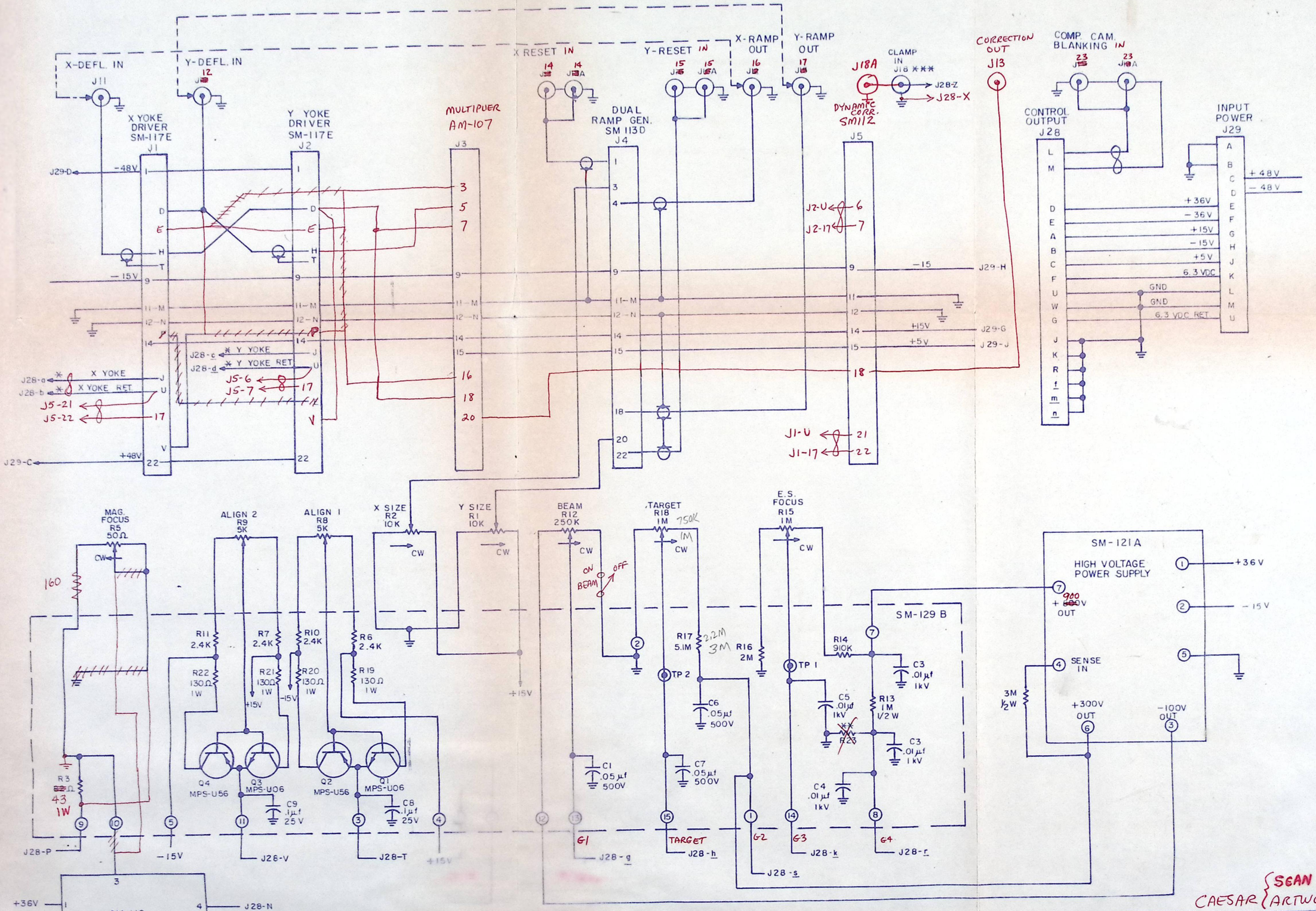
CAESAR ARTWORK "A"

COMPUTER IMAGE CORPORATION
2475 W. 2nd AVE
DENVER, COLORADO 80223

SCALE NONE	REVISION	BY	DATE
DATE 11-17-72			
DR'N E.R. CK'D.			
APP'VD.			

TITLE: CAMERA CONTROL WIRING DIAGRAM

SMW-300 A



NOTE.

ALL RESISTORS ARE 1/4 W., ± 5%, UNLESS OTHERWISE SPECIFIED.

~~SHIELDED~~

* TWISTED PAIR.

*** PICK UP CAMERA, BNC FROM J14 TO J18; SCAN CONVERTER CAMERA, CLAMP COMES FROM J50 ON COLOR CONTROLER

CAESAR { SCAN CONVERTER ARTWORK "B"

COMPUTER IMAGE CORPORATION	2475 W. 2nd AVE. DENVER, COLORADO 80223		
SCALE NONE	REVISION REV A	BY B.A.	DATE 4/4/74
DATE 11-17-72			
DR'N E.R. CK'D.			
APP'VD.			
TITLE CAMERA CONTROL WIRING DIAGRAM		DWG SMW-300 A	

CHASSIS CONNECTOR
UG-1094/U

J41

CHASSIS PLUG J40
AMPHENOL # 28-215

GRN #22 -15V SM-109-3 — .1X25V
BLK #18
RED #22 +15V SM-109-2 — .1/25V
RED #22 +15V SM-126A-6
WHT #22 0-80V VI #2 — .1/100V
WHT #22 SM-126A-8 — .01/1KV
WHT #22 VI #3 — 800V 900

TS-2 terminals: 1 2 3 4 5 6 7

.1/25V
2.7
2.7
.1/25V
100
100
.05/500V
.01/1KV

TS-1 terminals: 1 2 3 4 5 6 7

20
.1/25V
.1/100V
.01/1KV
.05/500V

ORN #18 +36V SM-109 #7
BLK #18
ES FOCUS WHT #22 450-650V VI #6
WHT #22 300V VI #5

J40

F	RED #22	6.3 VDC
G	WHT #22	6.3 VDC RETURN
L	WHT #22	COMP CAM BLNK
M		COMP CAM BLANK RETURN
N		FOCUS
P		FOCUS RET.
T		ALIGN #1
U		ALIGN #1 RET.
V		ALIGN #2
W		ALIGN #2 RET.
X	~~AGC~~	RET.
Z		VIDEO CLAMP
a		X DEF.
b		X DEF. RET.
c		Y DEF.
d	WHT #22	Y DEF. RET.
h		TARGET VOLTAGE

WHT #22 TARGET VOLTAGE → L
TS2-1 -15V → J
RED #22 → A
+15V TS2-3 → C
75Ω COAX VIDEO OUTPUT AMPHENOL = 21-597 → B
WHT #22 ~~AGC~~ RET. → E
WHT #22 VIDEO CLAMP → F

CAMERA
VIDEO PREAMPLIFIER
SM-126

9
10
VIDICON TARGET WHT #22

ORG
BRN
WHT/BLK
WHT/RED
WHT/BLUE
WHT/YEL

P43 (1 2 3 4 5 6 7 8) J43

VIDICON
GE-8572
VI

GRN
WHT
GRY
GRY
BLK
RED

1/4" GRD STRAP

WHT #22 → 8 K
TS1-1 → 7 +36V
WHT #22 COMP CAM BLNK → 6 BLNK IN
BLK #22 → 5 GRD
WHT #22 → 4 X SWEEP
TS2-1 → 3 -15V
TS2-3 → 2 +15V
WHT #22 → 1 Y SWEEP

CAMERA
VIDICON BLANKING
AND PROTECTION
SM-109

0.1/25V
0.1/25V
8 1
6.3 VDC FILAMENT
7 BLANKING

0-80V → .1/100V → 2 G1
300V → 5 G2
450-650V → 6 G3
~~800~~ 900V → .01/1KV → 3 G4
10K .01/1KV
VI

COMPUTER IMAGE CORPORATION		2475 W. 2nd AVE DENVER, COLORADO 80223			
SCALE		REVISION		BY	DATE
DATE	10/1/71				
DR'N.	CK'D.				
AP'VD.					
TITLE	CAMERA HEAD WIRING DIAGRAM		NO.	SMW-301A	

CHASSIS CONNECTOR
UG-1094/U

J41

CHASSIS PLUG J40
AMPHENOL #28-21P

GRN #22 -15V
SM-109-3
BLK #18
RED #22 +15V
SM-109-2
RED #22 +15V
SM-126 ~~A~~ H
WHT #22 ~~0~~ -100 V
~~V1#2~~
WHT #22
~~800~~ 340 V V1#3

.1/25V C8
.1/25V C9
.1/100V C10
.01/1K V C11
.01/1K V C6
.05/500V C5
.1/100V C1
.01/1K V C2
.05/500 V C3
.1/25V C4
C7 .1/25V

2.7, R4
2.7, R5
100, R6
100 V, R7
20, R1
100, R2
100, R3

TS-2 1 2 3 4 5 6 7
TS-1 1 2 3 4 5 6 7

ORN #18 +36V
SM-109 #7
BLK #18
ES FOCUS
WHT #22 ~~450-650 V~~ 290V
V1#6
WHT #22 300 V
V1#5

J40

F	RED #22	6.3 VDC
G	WHT #22	6.3 VDC RETURN
L	WHT #22	VIDEO CLAMP ~~COMP CAM BLNK~~
M		VIDEO CLAMP ~~COMP CAM BLANK~~ RETURN
N		FOCUS
P		FOCUS RET.
T		ALIGN #1
U		ALIGN #1 RET.
V		ALIGN #2
W		ALIGN #2 RET.
X		AGC
Z		
a		X DEF.
b		X DEF. RET.
c		Y DEF.
d	WHT #22	Y DEF. RET.
h		TARGET VOLTAGE

WHT #22 TARGET VOLTAGE L
RED #22 +15V TS2-3 A
75Ω COAX VIDEO OUTPUT AMPHENOL = 21-597 C
4
WHT #22 AGC J
WHT #22 VIDEO CLAMP F
I

9
10
VIDICON TARGET WHT #22

CAMERA
VIDEO PREAMPLIFIER
SM-126H

ORG
BRN
WHT/BLK
WHT/RED
WHT/BLUE
WHT/YEL

P43
J43

ST VIDICON
~~GE-8372~~ RCA 4532
VI

GRN
WHT
GRY
GRY
BLK
RED

VYLFA-915
1" VIDICON DEFLECTION ASSEMBLY

1/4" GRD STRAP

WHT #22
WHT #22
BLK #22
WHT #22
WHT #22
WHT #22

TSI-1
~~COMP CAM BLNK~~
TS2-1
TS2-3

8 K
7 +36 V
6 ~~BLNK IN~~
5 GRD
4 ~~X-SWEEP~~
3 -15 V
2 +15 V
1 ~~Y SWEEP~~

OVERLAP WRITE
VIDEO & INTENSITY
~~CAMERA~~
~~VIDICON BLANKING~~
~~AND PROTECTION~~
~~SM-109~~

VIDEO IN
INTENS. IN
G1
-100V

6.3 VDC FILAMENT
8 1
7
VIDEO BLANKING

INTENSITY
~~0-80V~~
300 V
290 ~~450-650~~ V
~~800~~ V
340

2 G1
5 G2
6 G3
3 G4
V1

.01/1KV C12
.01/1KV C13
10K 1/4W
.01/1KV C14

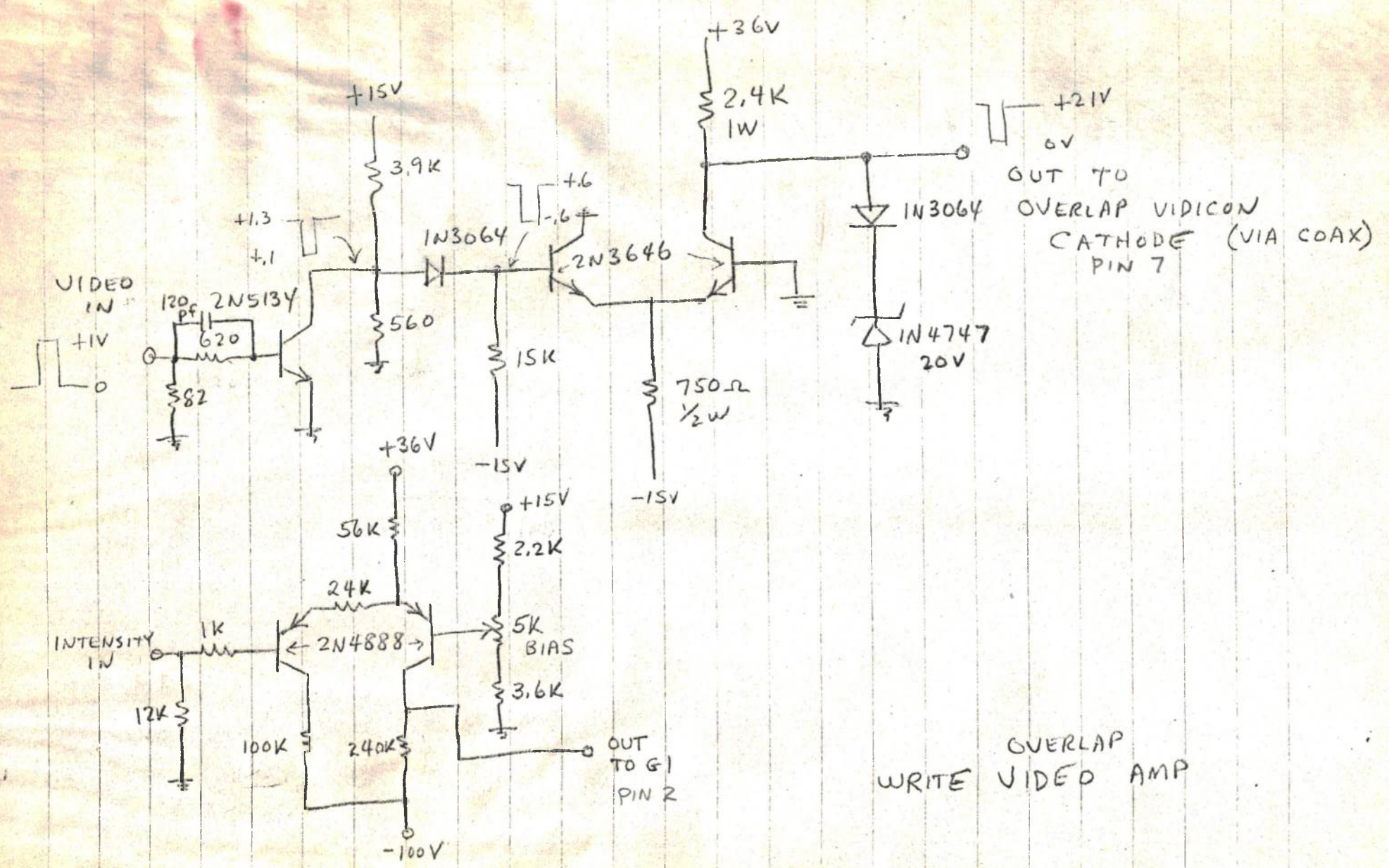
CAESAR +

500B
OVERLAP

COMPUTER IMAGE CORPORATION
2475 W. 2nd AVE
DENVER, COLORADO 80223

SCALE	REVISION	BY	DATE
DATE 10-1-71			
DR'N. CK'D.			
APP'VD.			

TITLE: CAMERA HEAD WIRING DIAGRAM
NO. SMW-301A



OVERLAP
WRITE VIDEO AMP

WCA 8-27-71

CAESAR

7-28-72

Camera Control + Head

Estimated Power Supply Currents (ma)

	±15V	±36V	±48
AM 107	30	—	
SM 109	5	7	
112	25	—	
113	30	—	
117 (2)	20	—	1500
119	—	50	
121	20	100 ?	
126	50 ?	—	
129	10	—	
	190	157	